



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/797,492	03/10/2004	Yihong Qi	1805-4001	3992
24259	7590	07/08/2005		EXAMINER
BRENDA POMERANCE				TAKAOKA, DEAN O
LAW OFFICE OF BRENDA POMERANCE			ART UNIT	PAPER NUMBER
260 WEST 52 STREET SUITE 27B				2817
NEW YORK, NY 10019				

DATE MAILED: 07/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/797,492	QI ET AL. <i>[Handwritten mark]</i>	
	Examiner Dean O. Takaoka	Art Unit 2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-6,8,9,11 and 13-24 is/are rejected.
- 7) Claim(s) 7,10 and 12 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 10 March 2004 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All
  - b) Some \*
  - c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 3/10/04, 12/9/04.
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 5, 8, 9, 11, 13, 14, 16, 17, and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Evtioughkine et al. (U.S. Patent No. 6,281,843).

Claim 1:

Evtioughkine et al. (best shown in Fig. 2) shows a coupler comprising a first element (20) having a rectangular portion and a tapered portion with a nose (the nose area comprising the end area of the tapered portion), a second element (also labeled as element 20) having a rectangular portion and a tapered portion with a nose, a third element (260/264) disposed between the nose of the first element and the nose of the second element, a matching network for electrically connecting the first element, the second element and the third element (262).

Claim 5:

Where the third element has a symmetric shape (where the rectangular shape of 260 is symmetric).

Claim 8:

Where the tapered portions of the first and second elements are approximately the same size (shown in Fig. 2).

Art Unit: 2817

Claim 9:

Where the tapered portions have straight edges on either side of the nose (where top and bottom angled edges of the tapered portion are straight).

Claim 11:

Where the matching network (262) has respective components between the first (20) and second (20) elements, the first and third (260/264) element, and second and third element.

Claim 13:

Having a VSWR of better than 2:1 over a frequency range of at least 600 to 2600 MHz (where Fig. 6 shows a VSWR of better than 2:1 at points 2-4 and Fig. 7 at points 2-4).

Claim 14:

Having dipole-like radiation patterns (Fig. 2).

Claim 16:

Having a generally flat antenna gain curve over a frequency range of at least 800 to 2500Mhz and a min-max gain variation of no more than about 2.5db (where Fig. 8 shows a flat gain curve shown exemplified by the flat VSWR and Fig. 9 shows a 0db variation with respect to radiation patterns at f = 810MHz and 960MHz).

Claim 17:

A bow-tie coupler comprising a first element (20) having a tapered portion (Fig. 2), the first element for connecting to the first portion of a signal feed structure (nose portion connected to signal feed element 26), a second element (20) having a tapered

Art Unit: 2817

portion, a third element (260/264) for connecting to a second portion of the signal feed structure, the third element located between the tapered nose portions of the first and second elements, and a matching network for electrically connecting the first, second and third elements.

Claim 21:

Having a VSWR of better than 2:1 over a frequency range of at least 600 to 2600 MHz (where Fig. 6 shows a VSWR of better than 2:1 at points 2-4 and Fig. 7 at points 2-4, discussed in the reasons for rejection of claim 13 above).

Claims 1 – 5, 8, 14, 17, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Vega et al. (U.S. Patent No. 6,265,977).

Claim 1:

Vega et al. (best shown in Fig. 1) shows a coupler comprising a first element (112) having a rectangular portion and a tapered portion with a nose (all shown in 112), a second element (114) having a rectangular portion and a tapered portion with a nose, a third element (116) disposed between the nose of the first element and the nose of the second element, a matching network for electrically connecting the first element, the second element and the third element (where 116 comprises elements shown in Fig. 13 where the rectifier matches or rectifies the power signal and/or the decoder, controller, modulator et al. decodes the signal and provides a modulated coupled signal to the antenna elements, thus comprising the matching network).

Claim 2:

Where the length of the rectangular element of the second portion is longer than the length of the rectangular portion of the first element (col. 9, lines 5-10; where Vega et al. teaches non-symmetrical and/or unequal patterns of antenna elements).

Claim 3:

Where the second element has an arm (nose portion connected to 116) for connecting to the matching network.

Claim 4:

Where the arm is approximately equal to the length of the third element (where the term "approximately" is broad, thus the length of the nose approximately equal to the length of element 116).

Claim 5:

Where the third element has a symmetric shape (where the rectangular shape of 116 is symmetric).

Claim 8:

Where the tapered portions of the first and second elements are approximately the same size (shown in Fig. 1).

Claim 14:

Having dipole-like radiation patterns (Fig. 11).

Claim 17:

A bow-tie coupler comprising a first element (114) having a tapered portion (Fig. 1), the first element for connecting to the first portion of a signal feed structure (nose portion connected to signal feed element 116 where 116 provides power and signal to

Art Unit: 2817

antenna elements 114), a second element (112) having a tapered portion, a third element (e.g. nose portion) for connecting to a second portion of the signal feed structure, the third element located between the tapered nose portions of the first and second elements, and a matching network for electrically connecting the first, second and third elements.

Claim 18:

Where the length of the rectangular element of the second element is longer than the length of the first element (col. 9, lines 5-10; where Vega et al. teaches non-symmetrical and/or unequal patterns of antenna elements, discussed in the reasons for rejection of claim 2 above).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Evtioughkine et al. in view of Liu et al. (U.S. Patent No. 5,914,695).

Evtioughkine et al. teaches the coupler comprising a first element having a tapered nose portion, the first element for connecting to a first portion of a signal feed structure, a second element having a tapered nose portion, a third element for connecting to a second portion of a signal feed structure, a matching network for

Art Unit: 2817

electrically connecting the first element, the second element and the third element, discussed in the reasons for rejection of claim 1 above, but does not show where the third element has a square shape.

Liu et al. (Fig. 1) shows a similar tapered antenna where the third element has a square shape.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the coupler disclosed by Evtiushkine et al. in the test chamber disclosed by Liu et al. Such a use would have realized the advantageous benefit of providing the advantageous benefit of providing a conducting patch reducing the resonating frequency of the antenna (col. 3, lines 16-18; Liu et al.) thus suggesting the obviousness of the modification.

Claims 15, 19, 22 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Evtiushkine et al. in view of Suh et al. (U.S. Patent No. 6,842,141).

Claims 15, 19 and 22:

Evtiushkine et al. teaches the coupler comprising a first element having a tapered nose portion, the first element for connecting to a first portion of a signal feed structure, a second element having a tapered nose portion, a third element for connecting to a second portion of a signal feed structure, a matching network for electrically connecting the first element, the second element and the third element, discussed in the reasons for rejection of claim 1 above, but is silent for use in a radio frequency test chamber.

Suh et al. teaches a similar antenna for use in an anechoic chamber (col. 13, line 12).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the coupler disclosed by Evtiushkine et al. in the test chamber disclosed by Suh et al. Such a use would have realized the advantageous benefit of providing accurate test results where the use of anechoic test chambers is well-known in the art for antenna testing thus suggesting the obviousness of using the antenna or coupler in the test chamber to obtain accurate test results.

Claim 24:

Having a VSWR of better than 2:1 over a frequency range of at least 600 to 2600 MHz (where Fig. 6 of Evtiushkine et al. shows a VSWR of better than 2:1 at points 2-4 and Fig. 7 at points 2-4, discussed in the reasons for rejection of claim 13 above).

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Evtiushkine et al. in view of Hemmie et al. (U.S. Patent No. 5,293,175).

Evtiushkine et al. teaches the coupler comprising a first element having a tapered nose portion, the first element for connecting to a first portion of a signal feed structure, a second element having a tapered nose portion, a third element for connecting to a second portion of a signal feed structure, a matching network for electrically connecting the first element, the second element and the third element, discussed in the reasons for rejection of claim 1 above, but is silent where the signal feed structure is a coaxial cable, the first portion of the signal feed structure is a ground

Art Unit: 2817

reference potential for the coax cable and the second portion is a center pin of the coax cable.

Hemmie et al. (Fig. 3) shows a similar tapered antenna where the signal feed structure is a coaxial cable (130), the first portion of the signal feed structure is a ground reference potential (160) for the coax cable and the second portion is a center pin (300) of the coax cable.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the coupler disclosed by Evtiushkine et al. in the test chamber disclosed by Hemmie et al. Such a use would have realized the advantageous benefit of providing an external feed connection for the antenna as is well-known in the art thus suggesting the obviousness of the modification.

Claims 15, 19, 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vega et al. in view of Suh et al. (U.S. Patent No. 6,842,141).

Claims 15, 19 and 22:

Vega et al. teaches the coupler comprising a first element having a tapered nose portion, the first element for connecting to a first portion of a signal feed structure, a second element having a tapered nose portion, a third element for connecting to a second portion of a signal feed structure, a matching network for electrically connecting the first element, the second element and the third element, discussed in the reasons for rejection of claim 1 above, but is silent for use in a radio frequency test chamber.

Suh et al. teaches a similar antenna for use in an anechoic chamber (col. 13, line 12).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the coupler disclosed by Vega et al. in the test chamber disclosed by Suh et al. Such a use would have realized the advantageous benefit of providing accurate test results where the use of anechoic test chambers is well-known in the art for antenna testing thus suggesting the obviousness of using the antenna or coupler in the test chamber to obtain accurate test results.

Claim 23:

Where the length of the rectangular element of the second element is longer than the length of the first element (col. 9, lines 5-10; where Vega et al. teaches non-symmetrical and/or unequal patterns of antenna elements, discussed in the reasons for rejection of claim 2 above).

### ***Allowable Subject Matter***

Claims 7, 10, and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sherwin – shows a tunable antenna.

Futaki et al. – shows a broadband antenna.

Art Unit: 2817

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dean O. Takaoka whose telephone number is (571) 272-1772. The examiner can normally be reached on 8:30a - 5:00p Mon - Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (571) 272-1769. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



dot  
June 24, 2005